

I Claim:

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- 5 1. A miniature flashlight comprising:
means for retaining a plurality of miniature dry
cell batteries in series electrical contact;
a miniature bi-pin lamp bulb;
means for holding the miniature bi-pin lamp bulb,
said means being movably retained by the means for
retaining a plurality of dry cell batteries;
10 a substantially parabolic reflector;
a substantially planar lens;
means for retaining the reflector and the lens in
a mutually fixed relationship, said means for retaining
the reflector and the lens being adapted to be
controllably translatable along the means for retaining
15 a plurality of dry cell batteries such that the
relative positional relationship between the reflector
and the lamp bulb may be varied, thereby varying a
reflection dispersion of a light beam emanating through
the lens from said miniature bi-pin lamp bulb;
20 means for electrically coupling a first electrode
of the series arranged dry cell batteries to a first
pin of the bi-pin lamp bulb; and
means for electrically coupling a second pin of
the bi-pin lamp bulb to a second electrode of the
25 series arranged dry cell batteries;
wherein relative motion of the means for retaining
the reflector and the lens in a direction toward the
means for retaining a plurality of miniature dry cell
batteries will cause the reflector to contact the means
30 for holding the miniature bi-pin lamp bulb and further
relative motion in the same direction will move the
means for holding the miniature bi-pin lamp bulb to
open an electrical contact at the means for
electrically coupling the second pin of the bi-pin lamp
35 bulb to the second electrode of the batteries.

2. A miniature flashlight, comprising:

5 a barrel containing a pair of miniature dry cell batteries in series electrical contact, said barrel having a first end and a second end, and having a radially inwardly directed annular ring formed at the second end;

10 a tail cap, including a spring member, threadably engaging with the barrel at the first end thereof, the spring member urging the dry cell batteries toward the second end of the barrel;

15 a head assembly, including a light transmitting lens and a beam forming reflector, threadably engaging a radially exterior surface of the barrel at the second end of the barrel, said reflector having a central hole formed therein adapted to enable the passage of a miniature lamp bulb there-through;

20 a first insulated receptacle, disposed within the barrel between the batteries and the lip formed at the second end of the barrel;

a center conductor member passing through the first insulated receptacle in an axial direction so as to be in electrical contact with a center electrode of the proximate battery;

25 a side conductor member mounted in the first insulated receptacle in a spaced apart relationship with the center conductor member, the side conductor member having a radially outwardly extending arm disposed between the lip formed on the second end of the barrel and a surface of the first insulated receptacle, said outwardly extending arm being spaced
30 apart from an inner diameter of the barrel;

a second insulated receptacle disposed external to the second end of the barrel, mechanically engaging the first insulated receptacle, said second insulated
35 receptacle being disposed within the head assembly but not mechanically coupled thereto; and

40 a miniature bi-pin lamp bulb mounted to the second insulated receptacle such that the pins thereof pass through the second insulated receptacle and are electrically coupled to the center conductor member and the side conductor member, respectively;

45 said threadable engagement of the head assembly to the barrel providing that the head assembly may translate axially with respect to the barrel to vary the position of the reflector with respect to the miniature lamp bulb, thereby providing a change in focus of a light beam emanating from the lamp bulb; and

50 whereby further translation of the head assembly along the barrel toward the tail cap will first cause the reflector to contact the second insulated receptacle and then move the second insulated receptacle, the first insulated receptacle, and the batteries against the urging of the spring member so as to separate the radially outwardly extending arm of the side conductor member from the lip formed on the second end of the barrel, thereby interrupting the electrical circuit of the miniature flashlight.

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3. A miniature flashlight, comprising:

5 a barrel, configured as an extended right circular cylinder, open at each end, having internal threads formed in a first end and external threads formed on a second end, and having a radially inwardly extending annular lip formed at the second end;

10 a tail cap, adapted to threadably engage with the first end of the barrel, the tail cap being further adapted to retain a spare miniature lamp bulb;

15 a first insulated receptacle, disposed within the barrel adjacent the lip formed at the second end thereof;

20 a center contact conductor passing through the first insulated receptacle in a direction parallel with a longitudinal access of the barrel;

25 a side contact conductor mounted in a surface of the first insulated receptacle proximate to the lip of the barrel, and having a radially outwardly extending arm disposed between the lip and the surface of the first insulated receptacle;

30 said center contact conductor and said side contact conductor being spaced apart equidistant from the axial center of the barrel;

35 a pair of miniature dry cell batteries disposed in a series arrangement within the barrel so as to be between the first insulated receptacle and the tail cap, the batteries being so oriented that their respective center electrodes face the second end of the barrel, with the center electrode of the dry cell most proximate to said second end of the barrel being in electrical contact with the center contact conductor;

a spring member disposed between the tail cap and the battery most proximate to the first end of the barrel so as to urge the batteries toward the second end of the barrel, the spring member serving as an electrical conductor between the tail cap and a case electrode of the battery;

40 a second insulated receptacle disposed external to the second end of the barrel so as to matingly engage the first insulated receptacle;

a bi-pin lamp bulb, held by the second insulated receptacle such that its two pins pass therethrough and into contact with the center contact conductor and side contact conductor, respectively;

45 a head member, configured generally as a right circular cylinder open at both ends, threadably engaging the exterior of the second end of the barrel;

50 a reflector member, having a substantially parabolic shape, disposed within the head member, the reflector member having a hole formed therein substantially at its apex through which the bi-pin lamp bulb may pass;

55 a substantially circular transparent planar lens element, the lens element retaining the reflector member within the head member; and

60 a face cap, configured as a substantially annular ring, threadably engaging with the head member, the face cap being adapted to rigidly retain the lens element and the reflector member between the face cap and the head member;

65 whereby full threadable engagement of the head member onto the barrel causes the apex region of the reflector member to come into contact with and translate the second insulated receptacle, together with the first insulated receptacle and the dry cell batteries within the barrel against the urging of the spring member, which translation displaces the radially outwardly extending arm of the side contact conductor from physical contact with the lip at the second end of the barrel, thereby opening an electrical circuit of the miniature flashlight.

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4. In a miniature flashlight providing for a continuous variation in the dispersion of a lightbeam emanating therefrom through a relative axial motion between a head assembly, containing a reflector, and a barrel assembly, containing a plurality of miniature dry cell batteries and supporting a miniature lamp bulb, the improvement comprising:

a first insulated receptacle, disposed within the barrel between the batteries and the lamp bulb, the first insulated receptacle being removably retained within the barrel;

a center conductor element passing through the first insulated receptacle in an axial direction so as to be in electrical contact with an electrode of the proximate battery;

a side conductor member mounted in the first insulated receptacle in a spaced apart relationship with the center conductor member, the side conductor member having a radially outwardly extending arm disposed between a surface of the first insulated receptacle and a lip formed on the end of the barrel retaining the first insulated receptacle, said outwardly extending arm being spaced apart from an inner diameter of the barrel; and

a second insulated receptacle disposed external to the end of the barrel, mechanically engaging the first insulated receptacle, said second insulator receptacle being exposed within the head assembly but not mechanically coupled thereto;

whereby translation of the head assembly along the barrel in a direction engaging the head assembly with the barrel will first cause the reflector within the head assembly to contact the second insulated receptacle and then move the second insulated receptacle and the first insulated receptacle in that direction so as to separate the radially outwardly extending arm of the side conductor member from the lip

on the end of the barrel, thereby interrupting the
electrical circuit of the miniature flashlight; and
40 whereby translation of the head assembly along the
barrel in a direction tending to disengage the head
assembly from the barrel will first allow the first
insulated receptacle and the second insulated
45 receptacle to follow the motion of the reflector until
the radially outwardly extending arm of the side
conductor member contacts the lip formed on the end of
the barrel, thereby closing the electrical circuit of
the miniature flashlight.